Virgin Fossil Fuel Exemption

NR 445 Technical Advisory Work Group
September 14, 2000

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Purpose

- To evaluate the appropriateness of applying the existing fossil fuel exemption for the combustion of coal to newly revised and listed pollutants in NR 445
  - acrolein (acute)
  - arsenic (carcinogen)
  - beryllium (carcinogen/chronic)
  - cadmium (carcinogen)
  - chromium (acute)
  - hydrogen chloride (acute/chronic)
  - hydrogen fluoride (acute)
  - manganese (acute)
  - mercury (acute/chronic)
  - nickel (carcinogen)
  - selenium (acute)

Summary of Findings

- Sources of acute compounds emit at a fraction of the level that would be allowed under their respective AAC.
- Sources of chronic compounds emit at a fraction of the level that would be allowed under their respective RfC.
- Sources of carcinogens above threshold levels emit at a rate resulting in an impact less than 10^{-5}, and/or are exhausted through high efficiency PM control devices.

Conclusions

- Existing exemption for emissions of coal combustion is appropriate given the intent (control to AAC or apply controls) of the regulations in NR 445.
- Subjecting the emissions to their respective emission limitations and standards in NR 445 (i.e., removing the exemption) would not result in additional reductions of, or impact from, the compounds evaluated.

Recommendation

- Exemption for emissions resulting from the combustion of coal should continue unmodified in chapter NR 445.
- Emissions of the 11 HAP's from the combustion of the other fuels (excluding diesel) included in the virgin fossil fuel exemptions are less than those from coal from these sources and therefore, do not warrant further evaluation.

Details of the Evaluation

- Modeling Parameters
  - ISCST3
  - 1 hour, 24 hour, 30 day and annual averaging times
  - generic modeling of 17 stack configurations for 5 meteorological regions
- Emissions
  - 1998 AEI
  - 87 coal fired boilers at 27 facilities
  - 33 industrial boilers, 54 utility boilers
  - stack heights ranging between 127 and 700 feet
  - stacks 400 feet or less included downwash

Details of the Evaluation (continued)

COMPOUND	Range of Impacts vs Applicable Standard
acrolein	less than 1%
beryllium	less than 8%
chromium	less than 3%
hydrogen chloride	less than 4% (1 hour), less than 13% (annual)
hydrogen fluoride	less than 2%
manganese	less than 4%
mercury	less than 2% (24 hour), less than 2% (annual)
selenium	less than 2%

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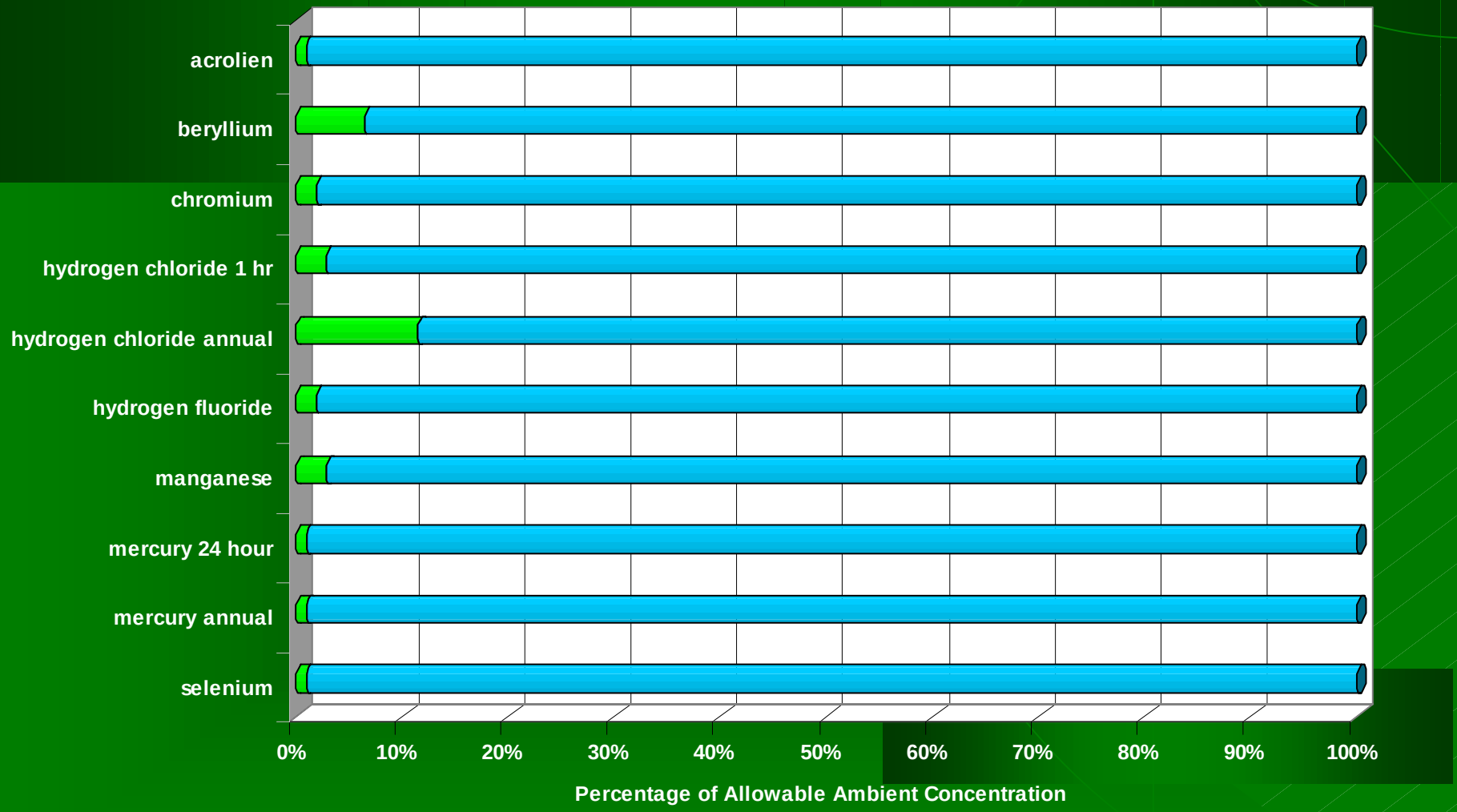
Evaluation of Emissions from Coal Combustion - Acute and Chronic



Details of the Evaluation (continued)

COMPOUND	Maximum Risk	greater than 10-5	between 10-6, 10-5	less than 10-6
arsenic	3.8x10-5	3	6	18
beryllium	3.6x10-6	0	2	25
cadmium	3.9x10-6	0	2	25
nickel	9.4x10-6	0	5	22

NOTE: The 3 impacts greater than 10-5 in this evaluation occurred from stack that included downwash. We chose to include downwash in the evaluation to add a degree of conservativeness. Most large coal fired boiler emissions are exhausted from stacks that are not influenced by downwash. If they are, the exemption would not apply to them and they would have to meet LAER.

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Evaluation of Emissions from Coal Combustion - Carcinogens